

## ABSTRACT OF THE DISCLOSURE

A method for the evaluation of the ultrastructure of connective tissue, such as cartilage, including (a) providing a probe operative in the near-infrared or mid-infrared region of the electromagnetic spectrum, (b) positioning the probe either to be in contact with the connective tissue (for detecting attenuated total reflectance) or within a sufficient distance from the surface of the connective tissue (for detecting reflection), (c) detecting infrared radiation which penetrates the surface of the connective tissue for detecting attenuated total reflectance or which reflects off the surface of the connective tissue and (d) analyzing the infrared radiation from step (c) for at least one of peak height, peak area and frequency, and comparing at least one of the peak height, the peak area and the frequency for established values for at least one of peak height, peak area and frequency for normal connective tissue to detect a modification in the molecular structure of the connective tissue.